

[March, 1956]

Screw Worm Project:

The most costly phase of the Project on basis of past experience is the media for larval rearing and labor for carrying out the work.

Emphasis on a low cost medium is essential if we are to substantially reduce the overall cost of a program.

Apparently substitution of vegetable proteins for animal proteins will not be successful. For greatest contribution towards the objective, the use of most economical - yet commercially available - animal products is indicated.

It seems that research thus far has indicated suitability of various animal tissues and fish.

On the basis of results, I think that a good low cost medium or several modified formulations could be specified.

It will require a careful and close study of available data on suitable animal products or products likely to be suitable. and then a





Research Program on suitable formulations that can be used for which raw materials can be obtained in whole or in part.

It seems to boil down to these items:

1. Blood
2. Muscle tissue from livestock
3. Hearts - Beef, Pork - sheep goats.
4. Fish

### Suggested Program

1. Since Blood is one of the cheapest items it is suggested that emphasis be placed on utilization of maximum amount of blood to produce maximum number of larvae per pound of medium.

In considering this both fresh and dried blood should be considered.

2. Obtain cost figures on cheapest beef or other carcasses. Determine suitability of whole ground dressed carcasses vs bone & tissues (If there is substantial saving by such use)

3. Determine ~~source~~ availability and cost of hearts from livestock and test suitability as rearing medium.

Since heart tissue may not be available to meet all requirements, determine suitability at 10% 25% 50% in media.





4. Since <sup>certain</sup> fish products are good suggest inquiring into reliable source of supply of various fish - (Fish meal for example - if it is low cost)

Since fish may not be available to meet all demands determine suitability of adding 10%, 25% or 50% to lean beef or beef hearts.

5. Since certain ~~raw~~ products especially fish <sup>and cheap</sup> products may be available in large supply during certain seasons it seems important to determine the cost of storing up to 500 tons of ground meat such as fish, hearts, lean meat, either commercially or to build a plant in connection with the project.

6. If storage is minor in cost consider possibility of whole meat as cheap source of animal protein.

7. Determine several formulations which would be suitable at a low cost and obtain experience in mass ripping. Suggest concentrated effort on 3rd stage least desirable meat since the ripping of this stage is most costly and losses may be more likely to throw on a range of media.





Ludquist

MAR 5 1956

### SCREW-WORM PROJECT

The most costly phase of the Project on basis of past experience is the media for larval rearing and labor for carrying out the work.

Emphasis on a low cost medium is essential if we are to substantially reduce the over-all cost of a program.

Apparently substitution of vegetable proteins for animal proteins will not be successful. For greatest contribution towards the objective, the use of most economical--yet commercially available--animal products is indicated.

It seems that research thus far has indicated suitability of various animal tissues and fish.

On the basis of results, I think that a good low-cost medium or several modified formulations could be specified.

It will require a careful and close study of available data on suitable animal products or products likely to be suitable. And plan a research program on suitable formulations that can be used for which raw materials can be obtained in whole or in part.

It seems to boil down to these items:

1. Blood
2. Muscle tissue from livestock
3. Hearts--beef, pork--sheep & goats.
4. Fish

#### Suggested Program:

1. Since blood is one of the cheapest items it is suggested that emphasis be placed on utilization of maximum amount of blood to produce maximum number of larvae per pound of medium.

In considering this, both fresh and dried blood should be considered.

2. Obtain cost figures on cheapest beef or other carcasses. Determine suitability of whole ground dressed carcasses vs boned tissues (if there is substantial saving by such use.)



MAR 5 1956

NEW-HORN PROJECT

The most costly phase of the project on basis of past experience is the media for larval rearing and labor for carrying out the work.

Emphasis on a low cost medium is essential if we are to substantially reduce the over-all cost of a program.

Apparently substitution of vegetable proteins for animal proteins will not be successful. For greatest contribution towards the objective, the use of most economically-available animal products is indicated.

It seems that research thus far has indicated suitability of various animal tissues and fish.

On the basis of results, I think that a good low-cost medium or several modified formulations could be specified.

It will require a careful and close study of available data on suitable animal products or products likely to be suitable. And plan a research program on suitable formulations that can be used for which raw materials can be obtained in whole or in part.

It seems to boil down to these items:

1. Blood
2. Muscle tissue from livestock
3. Heart-lung, post-lung & gonads
4. Fish

Suggested Program:

1. Since blood is one of the cheapest items it is suggested that experiments be placed on utilization of maximum amount of blood to produce maximum number of larvae per pound of medium.

In considering this, both fresh and dried blood should be considered.

2. Obtain cost figures on cheapest beef or other carcasses. Determine suitability of whole ground dressed carcasses vs boneless tissues (if there is substantial saving by such use.)



3. Determine availability and cost of hearts from livestock and test suitability as rearing medium.

Since heart tissue may not be available to meet all requirements, determine suitability of 10%, 25%, and 50% in media.

4. Since certain fish products are good, suggest inquiry into reliable source of supply of various fish--(fish meal for example--if it is low cost.) Since fish may not be available to meet all demands, determine suitability of adding 10%, 25%, or 50% to lean beef or beef hearts.
5. Since certain products especially fish products may be available in large supply and cheap during certain seasons, it seems important to determine the cost of storing up to 500 tons of ground meat such as fish, hearts, lean meat, either commercially or to build a plant in connection with the project.
6. If storage is minor in cost, consider possibility of whole meat as cheap source of animal protein.
7. Determine several formulations which would be suitable and at low cost and obtain experience in mass rearing. Suggest concentrating effort on 3rd stage larval development since the rearing of this stage is most costly and larvae may be more likely to thrive on a range of media.



3. Determine availability and cost of hearts from live-stock and test suitability as rearing medium.  
  
Since heart tissue may not be available to meet all requirements, determine suitability of 10%, 25%, and 50% in media.
4. Since certain fish products are good, suggest inquiry into reliable source of supply of various fish--(fish meal for example--it is a low cost). Since fish may not be available to meet all demands, determine suitability of adding 10%, 25%, or 50% to lean beef or beef hearts.
5. Since certain products especially fish products may be available in large supply and cheap during certain seasons, it seems important to determine the cost of storing up to 500 tons of ground meat such as fish, hearts, lean meat, either commercially or to build a plant in connection with the project.
6. If storage is minor in cost, consider possibility of whole meat as cheap source of animal proteins.
7. Determine several formulas which would be suitable and at low cost and obtain experience in mass rearing. Suggest concentrating effort on 3rd stage larval development since the rearing of this stage is most costly and larvae may be more likely to thrive on a range of media.